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19 JUL 1961

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The Honorable Chet Holifield
Chairman, Joint Committee on
Atomic Energy
Congress of the United States
Washington 25, D. C.

Dear Mr. Holifield:

Your letter of June 23rd requested that the Joint Committee be advised of any information we have regarding Russian interest in and development of nuclear-electrical propulsion systems for space application. In addition you requested our evaluation of an article appearing in the June 22, 1961 issue of Nucleonics Week in which it was stated that "On the basis of recent intelligence reports, Russia is expected to have a nuclear-electrical propulsion system of several hundred kilowatts operational in 1964".

Soviet work on ion propulsion systems for space applications was surveyed in one of our recent publications (CIA OSI-SM/61-1, 26 April 1961). I understand that this publication was made available to the Joint Committee shortly before your letter was received.

This report includes our latest information on ion propulsion systems. In addition, there are indications of Soviet interest in and basic research applicable to other "exotic" propulsion systems for space applications, e.g., plasma and arc-jet propulsion. Our information is too limited to predict any time period for introduction of such systems, but we expect this to occur several years after flight-testing of ion-propulsion systems.

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With reference to the Nucleonics Week article, we believe the quoted statement goes beyond what can be justified on the basis of evidence available to us. As

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We have not identified any specific Soviet effort to develop a reactor which could power an ion propulsion system. Their early success in achieving high temperature operation with the BR-5 fast plutonium reactor, and the lack of published subsequent developments in this field suggest that such a program may be underway, but positive proof is not available. Assuming that they do not meet unanticipated problems in scaling down the BR-5 to a size and power suitable for ion propulsion, and assuming that the start of this development coincided with the reported start of engine instrumentation work, the Soviets could probably meet the reported time schedule of the instrumentation work. Their development problems would probably be eased by the large carrying capacity of their launch vehicles. Although possible, it is unlikely that power sources in the "several hundred kilowatt" range would be available for flight test in the 1964 period. Furthermore, many troubles may be encountered in their reactor miniaturization efforts.

In summary, we do not believe that our evidence is firm enough to justify an unqualified estimate that the Soviets will flight-test a large ion propulsion system in 1964.

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Moreover, unanticipated development problems could seriously

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delay their actual flight-test date. However, the firm evidence of Soviet research on ion engines and the information on in-flight instrumentation provide sufficient indication of Soviet development of a large system to warrant our continued interest and attention.

Sincerely,

SIGNED

C. P. Cabell
General, USAF
Deputy Director

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ORIGINATED BY:

Chief, Nuclear Energy Division/OSI

7 JUL 61
Date

CONCURRENCES:

Assistant Director/Scientific Intelligence

11 JUL 1961

Date

Legislative Counsel

18 JUL 61
Date

Deputy Director/Intelligence

JUL 14
1961

Date

OSI/NED/ :pam: (7 July 1961)

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MEMORANDUM FOR: DEPUTY DIRECTOR

Attached is a suggested reply which has been prepared by OSI in response to Representative Holifield's letter concerning an article in Nucleonics Week on nuclear-electrical propulsion. As explained in Dr. Scoville's briefing paper, we forwarded to the Joint Committee a Scientific Intelligence Memorandum on this subject after Mr. Holifield signed his letter but before it was received here. In view of your recent conversation with Holifield, I believe it would be appropriate for you to sign this letter.

LAWRENCE R. HOUSTON
General Counsel

(DATE)
18 JUL 1961

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11 JUL 1961

**MEMORANDUM FOR: Legislative Counsel/Office of
General Counsel**

**SUBJECT: Reply to Congressman Holifield
on Soviet Ion Propulsion**

1. In accordance with your request of 3 July 1961, enclosed is a proposed reply to Congressman Holifield for the signature of General Cabell.

2. This proposed reply differs in some respects from the NASA report on Soviet ion propulsion work referred to by Congressman Holifield. Therefore, it is suggested that a copy of the inquiry from Congressman Holifield and the enclosed reply be sent to NASA.

**HERBERT SCOVILLE, JR.
Assistant Director
Scientific Intelligence**

Enclosure:
Proposed reply to
Congressman Holifield

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